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THE THEORY OF LOAN CREDIT IN RELATION TO CORPORATION ECONOMICS— DISCUSSION

FREDERICK A. CLEVELAND: To state the points briefly and concisely, my objections to the method employed by Dr. Norton are two: (1) that the method used for reaching his conclusions is unscientific; and (2) that the method of presenting his results is not one which may be readily understood by the economists themselves with whom it is necessary to co-operate in the development of a science, nor is it readily intelligible to the public in whose education we are primarily interested. These objections will be presented in the order suggested.

The logical method by which Dr. Norton reaches his conclusions is entirely *a priori*. Such a process of reasoning is entirely proper when applied to mathematics or to the development of any scheme of thought from premises which are well established, and concerning which there can be no dispute nor objections raised by those to whom this form of reasoning is addressed. Dr. Norton, in his paper, however, has attempted to apply *a priori* processes of reasoning to assumptions which are neither established, nor can they be admitted for the sake of argument without doing violence to the subject which he is seeking to unfold. For example, his most fundamental conclusion which is used as a basis for further *a priori* reasoning is that competition does not enter into the prices of monopoly goods. This assumption or conclusion is not a generally accepted one—in fact the position taken has been a subject of heated discussion among economists themselves, and certainly

would not be accepted by men in the business world as established.

Mathematical reasoning is wholly *a priori*; but the truth of mathematical conclusion depends entirely on the truth and general acceptance of its premises. To attempt to apply mathematical reasoning to assumptions that are not accepted, and concerning which there has been no conclusive demonstration as to the truth, can result in nothing but a waste of energy on the part of the one making the application of the method to the development of his subjects, and a waste of time on the part of those who attempt to follow the development. It is for the reason that no broad generalizations have been established, and that none will be admitted without question, that the *a priori* method alone cannot be used for the unfolding of a science. It is in those branches of knowledge only where research has been applied as the method of inquiry, and where *a priori* reasoning has been employed simply as a guide to research, that progress has been made.

In economics the method of the past has been one of reasoning from primary assumption to a further conclusion. The scientific method seems not to have won a place among those who have devoted themselves to the field of economic inquiry. The result is that there has not to this time been established a single conclusion that may be accepted without controversy, even by economists themselves. It is this fact that makes futile the method of Dr. Norton and of all others who seek to apply mathematical or other forms of *a priori* reasoning alone to constructive thought in the field of business. Before we can ever hope to develop a systematic body of knowledge which will win for itself the confidence of the thinking world, the method of scientific

research—that method of reasoning which treats present generalizations purely as working hypotheses, and which from these goes out into the business world and attempts to assemble and classify the data around these hypotheses—a method which refuses to accept any conclusion as a basis for reasoning without again bringing that reason to the basis of scientific proof must be invoked by the economist.

The second objection urged by way of criticism to the paper under discussion pertains to the method of presentation. If the assumption heretofore made that a science must be the result of co-operative effort, and further, that the purpose of scientific investigation is to impart information, then it follows that one who is seeking to contribute to the present sum of existing knowledge should present the results of his labor in such form as to permit those working with him to avail themselves of the results with greatest facility; the form of presentation should be one which most readily appeals to the intelligence of the class to whom it is addressed.

If we assume that the paper under discussion was addressed to economists, then the form of presentation should be one that would be readily understood by economists. Again, if it were addressed to the public it should be stated in a language familiar to the public. I do not think that I would be thought to be hypercritical if attention were called to three characteristics in which the paper of Dr. Norton did not seem to conform to the purpose as above expressed, viz: (1) That in certain parts a nomenclature has been used which is not common within the field of economics itself, and is not at all understood by the public. (2) that the use made of diagrammatic emblems does not lend clearness to

the exposition. (3) that mathematical formulæ are not a language that can be readily followed, and therefore is not one which the economists or the public at large can follow with facility.

As to the nomenclature used, and to which reference is made, I may cite the following: "Weber's law suggests that on the assumption of equality of enjoyment, equality of properties maximizes this ophelimity." The meaning of this clause to most readers even in the field of economics would be absolutely lost, whereas, the same idea might be very easily expressed in terms that are in ordinary and general use. As to the diagrammatic representation of thought presented, there are few people who are accustomed to think in terms of "skew curves," etc.; to most readers no idea is conveyed by such a device. If after hours of serious thought the message which the writer has to convey may be drawn from the context, it is at the cost of time and effort greater than most readers will be willing to give. It is suggested that the same ideas might be expressed without this lumbering method of expression—an expression entirely plain and clear to one who has become an expert in the handling of obscure terms, ingenious diagrams and mathematical formulæ, but which stand in the way of conveying ideas to economists and to others who have been accustomed to think about similar problems, and to express their thought in a different way. As to the resort made to mathematical formulæ there is nothing in the subject handled which requires such a presentation, and therefore, it is suggested that this method of conveying thought on the subject is one least intended to make whatever results have been obtained, useful to others.

These criticisms would not be offered, in Dr. Norton's

absence, were they not intended as a protest against the whole class of economic writings for which the paper before us stands as an example. To be more specific it is urged: (1) that the field of business, both public and private, is capable of scientific treatment—that the facts may be collected, classified and co-ordinated, and that scientific conclusions may be reached in this branch of inquiry as well as in physiology, anatomy and botany; (2) that the *a priori* method which begins by taking for granted certain broad generalizations, and from these first assumptions projects reason out into intellectual space is not a method by which a science of economics may be developed; (3) that those who have turned from the usual method of expression to mathematics are simply employing symbols and forms to make the reason itself more exact, but by this can add absolutely nothing unless each hypothesis is brought to the test of scientific research, and this the mathematical economists have failed to do; (4) that this form of erudition, based as it is solely on philosophic reflection and a long line of purely empirical reasoning, when so stated as to be readily understood, must still put the reader to the task of making a scientific test of its conclusions and therefore can be of little value; but when it also attempts to express itself in symbols and signs unusual or which first require translation, it so far compounds the difficulty as to make the result entirely questionable. Working from a few commonplace assumptions the economists have for two centuries been building their tower of Babel. Gradually they have risen from one premise to another; but not having a method of inquiry which has brought them into intellectual co-operation, each has followed his own line of projection, and each from his own high pedestal talking in a language

peculiar to himself has addressed himself to his own imaginary audience, until they can no longer understand each other. By men of affairs (those who have some knowledge of economic data) to use the language of a recent review, "they are regarded as mere pedants and pundits beating their ineffectual wings in a void of of their own creation." Should the economist forsake the method of our primitive philosophies, and accept the method of modern science, the business men would be first to welcome his results; and gradually a science of economics would rise to the plane of history, chemistry, physics and the other established branches of exact knowledge.